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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	
1998 BIENNIAL REGULATORY REVIEW	ET Docket No. 98-80
CONDUCTED EMISSIONS LIMITS BELOW 30 MHZ FOR EQUIPMENT REGULATED UNDER PARTS 15 AND 18 OF THE COMMISSION'S RULES	

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

COMMENTS OF MICROSOFT CORPORATION

Microsoft Corporation submits these comments on the Commission's review of its rules in Parts 15 and 18 regarding conducted emissions limits below 30 MHz. This review gives the Commission an opportunity to help jump start a new technology industry, with the potential for vastly enhancing consumer welfare.

Carrier current technology, within a home or building, provides almost unlimited possibilities for networking. Operators of carrier current systems deliberately transmit Radio Frequency ("RF") signals over internal electrical wiring as a means of communicating with devices connected to the power line.[1] This technology converts old-fashioned electrical wires into pre-installed pathways for sophisticated communications. Among other things, it can be used to network personal computers (PCs) or other computing equipment, or to control other household devices through a PC. Microsoft, which has a keen interest in promoting the enhanced functionality of computers, strongly

[1] As noted in the NOI, carrier current systems can be both intentional and unintentional radiators. NOI at n.8.

urges the Commission to promote the rapid deployment of this technology. To do so, the Commission must assure that the emissions rules contained in Parts 15 and 18 do not unnecessarily hamper its development.

The Commission's current rules strike an acceptable balance in facilitating the development of new carrier current technology, while providing adequate protection for other users of the radio spectrum. But added flexibility would hasten deployment of such technology. Microsoft has three suggestions for this proceeding.

First, the Commission should declare that chief among its concerns in this proceeding is the promotion of new technologies. Carrier current systems are one of the most promising of technologies for home control and home networking, and the Commission should do what it can to facilitate their development.

Second, the Commission should continue to pursue its general policy of requiring the measurement of radiated emissions to establish compliance in frequencies outside the AM radio band. This approach has been flexible enough to effectively minimize interference while simultaneously allowing carrier current technology to develop.

Third, the Commission should consider setting a line conducted emissions cap, the satisfaction of which could be used as an *optional alternative* method — available at the option of manufacturers — of demonstrating compliance in frequencies outside the AM radio band. Such an alternative method would streamline FCC verification of carrier current equipment and would provide the type of regulatory certainty that would further promote investment and the development of new technology.

THE COMMISSION SHOULD PROMOTE NEW TECHNOLOGIES SUCH AS CARRIER CURRENT SYSTEMS

The Commission has a statutory duty to promote new technologies. Congress has directed that "[i]t shall be the policy of the United States to encourage the provision of new technologies and services to the public."[2] Bearing this mandate in mind, the Commission should seek to maximize the potential for the introduction of new technologies to consumers as it evaluates its current rules and any proposals made during the comment rounds.

Carrier current systems in development today promise to reduce substantially the cost of networking electronic devices, especially in the residential environment. In recent years, computers and household appliances have become increasingly sophisticated. These advanced machines can become even more useful, and more sophisticated, if they can be networked to communicate with one another or with a central control node. In a networked home, PCs are able to share resources and appliances can be centrally controlled, even from remote locations.

But as the Commission is well aware, laying new lines for home networking or any other purpose can be prohibitively expensive. As service providers have demonstrated with DSL[3] and other technologies, a useful strategy for avoiding this problem is to make more efficient or complementary use of wires that have already been installed. Carrier current technology uses electrical wiring that goes literally to the last

[2] 47 U.S.C. § 157; *see also* section 706 of the Communications Act of 1996, which requires the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans." 47 U.S.C. § 157 note.

[3] Digital Subscriber Loop ("DSL") technology enables providers to condition ordinary copper telephone wires to provide high speed data service.

yard, providing access to virtually every room in a residence or other building. And the technology is already on the market. X-10, Inc. produces a series of products that allow users to control appliances and other products in the home. Intelogis, Inc. markets a home networking product that can transmit data over power lines at seven times the speed of a conventional modem. And more innovations will soon be introduced. In light of these developments, the Commission should ensure that its RF emissions regulations are fashioned in a way that will promote the speedy introduction of new carrier current technology. The congressional mandate to promote new technology demands nothing less.

THE COMMISSION SHOULD CONTINUE TO MEASURE COMPLIANCE BASED ON RADIATED EMISSIONS IN FREQUENCIES OUTSIDE THE AM RADIO BAND

The Commission does not now limit the levels of RF voltage that carrier current operators are permitted conduct into a power line, except in the AM radio bands (535-1705 kHz).[4] Outside the AM radio bands, the Commission sets limits on emissions that carrier current systems may radiate. As the Commission recognized in the NOI, differences in such factors as impedance and wiring layout can have an impact on the level of radiated emissions, and therefore on the potential for interference. Since the potential for interference is mostly determined by the amount of radiated emission, and radiated emissions are *not* necessarily determined by the amount of voltage conducted into the line (because of local variation), the Commission generally focuses on the

[4] 47 C.F.R. § 15.207 (c). Carrier current systems containing their fundamental emission in the AM radio bands that are intended to be received using a standard AM broadcast receiver have no limit on conducted emissions.

radiated output rather than on the voltage input. This approach makes sense because it addresses the direct cause of potential interference. Undue conduction restrictions are not placed on carrier current systems because interference potential is determined by factors other than the voltage conducted. Since these factors cannot be adequately accounted for prior to installation, compliance must be determined on a case-by-case basis.

Microsoft supports this approach. The rules allow carrier current systems to operate unless they actually have the potential of causing interference to another user of the spectrum. The Commission should maintain these rules because they directly address the real issue, and permit carrier current systems the flexibility to adapt to local conditions.

THE COMMISSION SHOULD INVESTIGATE THE FEASIBILITY OF SETTING A LINE CONDUCTED EMISSIONS CAP AS AN ALTERNATIVE METHOD FOR CARRIER CURRENT SYSTEMS TO DEMONSTRATE COMPLIANCE OUTSIDE THE AM RADIO BAND

While Microsoft endorses the current rules, it also supports the Commission's suggestion of developing a reasonable conducted emissions cap, satisfaction of which would serve as an alternative method of compliance.[5] Such an alternative would provide regulatory certainty to those operators and manufacturers who value it over the flexibility inherent in the radiated emission approach.

The Commission has previously recognized the importance of regulatory certainty to Part 15 manufacturers and users.[6] Some members of the carrier current industry may be reluctant to make the substantial investment required to bring their product to market

[5] *See* NOI at ¶ 14.

[6] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Report and Order*, 10 F.C.C. Rcd. 4695, 4705, ¶ 16 (1995).

if they cannot be assured that their equipment complies with FCC regulations before it is installed. If the radiated emissions approach remains the exclusive method of demonstrating compliance, the attendant uncertainty of the case-by-case inquiry might undermine the successful deployment of carrier current technology. Therefore, in order to help unleash this technology's exciting potential, the Commission should consider a line conducted emissions cap that would enable manufacturers and operators to demonstrate compliance prior to installation.

It is of extreme importance that any such limit that is adopted be established as an *optional alternative* method of complying with the Commission's rules.[7] In no way should any adverse inference be drawn from a failure to comply with such a cap. By maintaining two parallel methods of compliance, the Commission, the industry, and the public would reap the rewards of both regulatory certainty *and* regulatory flexibility. It is possible here to have it both ways. Those who comply by meeting the conducted emissions limit will benefit from the associated certainty and from the cost savings and other benefits they would derive from standardizing equipment and operations. Those who comply by meeting the radiated emissions cap will benefit from the flexibility inherent in the ability to adjust conducted emissions based on local conditions. In both cases, carrier current operators and manufacturers will be able to pursue the path they think best. And no matter which course they choose, other users of the spectrum will be adequately protected from interference.

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[7] The Commission has established many alternative standards in Part 15. *See, for example,* §§ 15.109 (specifying that carrier current systems may either comply with radiated emissions standards provided in § 15.209 or with those specified in § 15.221(a) when emitting in the AM radio band), 15.215 (establishing that §§ 217-255 provide alternatives to the general radiated emissions limits for intentional radiators in specified frequency bands), 15.35(c) (alternative measurement techniques).

The key to this approach is finding the right level at which to set the conducted emissions cap. Conceptually, the cap should be set at the highest level at which carrier current service in an ordinary home setting would be commercially viable without causing unacceptable interference to other users of the spectrum. Further study is, of course, needed to explore the many technical issues involved if the Commission chooses this approach. Microsoft is committed to working with the Commission and industry to devise a conducted emission cap that will meet the needs of all affected parties and render this alternative compliance method a reality.

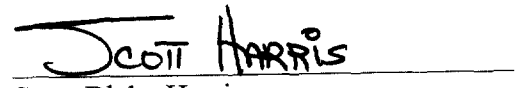
CONCLUSION

Microsoft applauds the Commission for initiating this review of rules governing conducted emissions below 30 MHz. As is the case with many of the industries that come within the Commission's regulatory jurisdiction, carrier current system operators and manufacturers are experiencing a period of unprecedented technological development. Forward-thinking regulation that minimizes restrictions on these systems will best enable the industry to expeditiously bring the benefits of the newly developed technology to consumers.

For the reasons set forth above, the Commission should retain its rules regarding radiated emissions as they apply to carrier current systems. The Commission should also investigate the possibility of setting a line conducted emissions cap as an alternative method for carrier current systems to demonstrate compliance with the Commission's

rules. This dual approach will facilitate the speedy development of carrier current technology and will adequately protect other users of the nation's spectrum resources.

Respectfully submitted,



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